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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/582,673

06/22/2006

Toshiyuki Inagaki

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12/30/2008

OLIFF & BERRIDGE, PLC

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EXAMINER

SUITTE, BRYANT P

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

12/30/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/582,673	Applicant(s) INAGAKI, TOSHIYUKI	
	Examiner BRYANT SUITTE	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 September 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 1-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 27-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/12/06</u> . | 6) <input type="checkbox"/> Other: _____ |

FUEL CELL STACK STRUCTURE

Examiner: Suitte

10/582,673

December 12, 2008

DETAILED ACTION

1. The Applicant's request for reconsideration filed on September 10, 2008, was received. Claims 27 and 36 were amended.
2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action issued on June 9, 2008.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

4. The rejection under 35 U.S.C. 102(b) on claims 27-31, 35, 38 and 39 as being anticipated by Mizuno is withdrawn because claim 27 is amended.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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6. Claims 27, 28, 29, 30, 31, 35, 38 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizuno (US 2001/0049047).

Regarding claims 27 and 38, Mizuno discloses a fuel cell stack comprising a pair of separators (24, 25), an electrolyte membrane (21), diffusion electrodes (23, 22), a platinum catalyst layer that is applied to the electrolyte, and an adhesive layer that is interposed between the separators. See figure 1, 2 and paragraph 42. The adhesive layer contacts all of the comprised components of the fuel cell. See figures 1 and 2. The adhesive layer has a modulus of elasticity of 2-50 MPa. See figure 8. In the case where the claimed ranges “overlap or lie inside ranges disclosed by the prior art” a prima facie case of obviousness exists. *In re Wertheim* 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

Regarding claim 28, Mizuno discloses a fuel cell stack comprising an electrolyte membrane that extends past the catalyst layer and diffusion electrodes (diffusion layer). See figure 2. The adhesive layer is interposed between the membrane and separators. See figure 2.

Regarding claim 29, Mizuno discloses a laminated fuel cell stack that comprises an adhesive layer interposed between a pair of separators and in contact with the catalyst and diffusion electrode (diffusion layer). See figure 2.

Regarding claim 30, Mizuno discloses a modulus of elasticity of 2 to 50 Mpa. See figure 8.

Regarding claims 31 and 39, Mizuno discloses an adhesive comprising 2% resin beads with a diameter of 50 μm . See paragraph 62.

Regarding claim 35, Mizuno discloses that the adhesive layer is applied to the separators (24, 25). See figure 4. The separators are sandwiched together as depicted in figure 3.

Claim Rejections - 35 USC § 103

7. The rejections under 35 U.S.C. 103(a) on claims 32-34, as applied to claims 27, 28, 29, 30, 31, 35, 38 and 39, as being unpatentable over Mizuno (US 2001/0049047) and Uchida et al. (6,316,139) is maintained.

Regarding claims 32 and 33, Mizuno discloses a fuel cell stack as recited in paragraph 2 above. However, Mizuno does not disclose a rigid spacer that is provided in the adhesive layer.

Uchida discloses a rigid spacer (23) that is interposed between the adhesive layers (22). See Figure 1c. Therefore, it would have been obvious to one of ordinary skill in the art to utilize the rigid spacer interposed between the adhesive layers with the fuel cell of Mizuno because Uchida teaches that the adhesive layer and elastomer layer provide a sufficient insulation and sealing between adjacent separators. See column 4 lines 1-10.

Regarding claim 34, Mizuno discloses an adhesive layer has a modulus of elasticity of not greater than 10 MPa. See abstract.

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8. The rejections under 35 U.S.C. 103(a) on claims 36-37, as applied to claims 27, 28, 29, 30, 31, 35, 38 and 39, as being unpatentable over Mizuno (US 2001/0049047) and Yamauchi et al. (US 2004/0142226) is maintained.

Regarding claims 36 and 37, Mizuno discloses a fuel cell stack as recited in paragraph 2 above. However, Mizuno does not disclose a flat plate which is placed on the separator which contacts the bead gasket to increase the planar rigidity of the separator.

Yamauchi discloses a pair of planar frames (6a, 6b) that are adjacent, are attached to the separators. See figure 1. By definition adjacent is defined as lying near, neighboring or close. See website <http://en.wiktionary.org/wiki/adjacent>. Therefore, it would have been obvious to one of ordinary skill in the art that the planar frames are adjacent to each other. It can be concluded that the frames apply an increase planar rigidity to the separator. Furthermore, it would have been obvious to one of ordinary skill in the art to utilize the frames with the fuel cell of Mizuno because Yamauchi teaches that the frames maintain a gas tight condition for the fuel cell stack. See paragraph 44.

Response to Arguments

9. Applicant's arguments filed September 10, 2008 have been fully considered but they are not persuasive. *Applicant's principle arguments are:*

a) The prior art fails to disclose the Young's modulus within a range of 30 to 100 MPa, thereby teaching away from the claimed invention.

10. In response to Applicant's arguments, please consider the following comments.

a) Mizuno discloses a modulus of elasticity vs. peeling strength ranging from 2 to 50 MPa. Mizuno does disclose that the optimum modulus elasticity is 5 and that the higher the modulus the lower the peeling strength. However, does not disclose that utilizing a modulus of 30-50 MPa would deliver a fuel cell that is inoperable. Therefore, even though the optimal modulus of 5 MPa is utilized by Mizuno a modulus of 30-50 MPa can be utilized to formulate a separator for a fuel cell. In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976).

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRYANT SUITTE whose telephone number is (571)270-3961. The examiner can normally be reached on Mon-Fri 10-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/BRYANT SUITTE/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795